Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the single photon source;

wherein the method comprises the steps of:

conducting an acquisition procedure using the single photon source to produce detection data; ~~and~~

generating artificial coincidence count data taking the position of the single photon source into account; and

processing said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array by processing said artificial coincidence count data, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that the measured model is related to a weighted sum of individual efficiencies.

2. (Previously presented) A method according to claim 1, wherein said conducting step further comprises conducting a blank scan acquisition.

3. Canceled.

4. Canceled.

5. (Previously presented) A method according to claim 1, wherein the scanner is a non-rotating scanner.

6. (Previously presented) A method according to claim 1, wherein the scanner is a rotating scanner.

7. (Previously presented) A method according to claim 6, wherein the scanner comprises two single photon sources and the method further comprises the step of selectively operating one of the two single photon sources during the step of conducting the acquisition.

8. (Previously presented) A method according to claim 1, wherein said processing step further comprises the step of generating an output on an output device for an operator.

9. (Previously presented) A method according to claim 1, wherein said processing step further comprises processing said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

10. (Previously presented) A method according to claim 9, further comprising the step of processing said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

11. (Previously presented) A method according to claim 9, further comprising the step of processing said data representative of efficiencies using a function determining a parameter relating to an amount of variation therein.

12. (Currently amended) Computer software for generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

wherein the scanner includes a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron emitting source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the positon of the single photon source;

wherein the software is adapted to operate on detection data generated by conducting an acquisition procedure using the single photon source, and wherein the software is adapted to operate on said artificial coincidence count data, and

wherein the software is adapted to process said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that the measurement model is related to a sum of their individual efficiencies.

13. (Previously presented) Computer software according to claim 12, wherein said acquisition procedure includes a blank scan acquisition.

14. Canceled.

15. Canceled.

16. (Previously presented) Computer software according to claim 12, wherein the scanner is a non-rotating scanner.

17. (Previously presented) Computer software according to claim 12, wherein the scanner is a rotating scanner.

18. (Previously presented) Computer software according to claim 17, wherein the scanner comprises two single photon sources and the software is adapted to selectively operate one of the two single photon sources during the acquisition procedure.

19. (Previously presented) Computer software according to claim 12, wherein the software is adapted to generate an output, responsive to said data representative of efficiencies, on an output device for an operator.

20. (Previously presented) Computer software according to claim 12, wherein the software is adapted to process said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

21. (Original) Computer software according to claim 20, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

22. (Previously presented) Computer software according to claim 20, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an amount of variation

therein.

23. (Previously presented) A data carrier comprising computer software according to claim 12.